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Gang Huang

Huang 13-12-6

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EXAMINER

NGO, NGUYEN HOANG

ART UNIT

PAPER NUMBER

2416

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/046,749 | Applicant(s) HUANG ET AL. | |
| | Examiner NGUYEN NGO | Art Unit 2416 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.
2. This communication is in response to the amendment of 3/23/2009. All changes made to the Claims have been entered. Accordingly, Claims 33-66 are currently pending in the application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
2. Claim 47 and 63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
3. Regarding claim 47, and 63, discloses the limitation of the first identifier is encoded in the first set of pulses by variable timing intervals between adjacent pulses in the first set of pulses. Nowhere in the Specification does it disclose the term variable

Art Unit: 2416

timing intervals. Applicant is urged to specifically point out the limitations of claim 47 and 63.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 33-37, 41, 42, 45, 48, 49-53, 57-58, 61, 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US 6853681), in view of Haartsen (US 2002/0131486), hereinafter referred to as Lindoff and Haartsen.

Regarding claim 33, 34, 49, 50, Lindoff discloses a network device for a communication network (digital telecommunication receiver, abstract and figures 1 and 2), the network device comprising:

(a) a database table (detection parameter table (col3 lines 30-40) adapted to:

(1) store one or more sets of one or more parameters, each set corresponding to a different identifier (for each training sequence (identifier), there is one entry in the table that represents a detection parameter set, col5 lines 60-col6 lines 4); and

(b) a receiver (Rx as seen in figures 1 and 2) adapted to:

(1) receive a first data packet from the first transmitter (data reception of messages, col6 lines 25-30), the first data packet comprising a header and a payload (which is a concept well known in the art);

(4) retrieve the first set of one or more parameters from the database table based on the first identifier (upon determining the training sequence being used, for configuring the receiver assembly. The detection parameter set, may be selected from a table of detection parameter sets, col8 lines 22-35);

(5) process at least a portion of the first data packet based on the first set of one or more parameters (processing of the received signal, col2 lines 49-53 and col9 lines 30-50);

Lindoff however fails to specifically disclose the specific details of the auxiliary coding used to retrieve the one or more parameters from the table. Lindoff however discloses that receivers generally process a received signal using a training sequence and that the training sequence is a pre defined digital string which is sent along with the

Art Unit: 2416

data transmissions (col1 lines 50-55). In a similar fiend of endeavor, Haartsen discloses the specifics of sending a training signal, as Haartsen discloses;

(2) receive a first auxiliary coding corresponding to the first data packet (receiver receiving a initial portion containing at least one flag to identify a corresponding reference training signal, page 2 [0016], wherein: the first auxiliary coding identifies the first identifier (training signal) ;

(3) recover the first identifier from the first auxiliary coding (page 4 [0040]);

It would have thus been obvious to a person skilled in the art at the time the invention was made to incorporate the concept of sending auxiliary coding from a transmitter to a receiver which identifies a identifier used for select specific parameters at a receiver, as disclosed by Haartsen into the method of configuring a receiver with the selected parameter set to receive data transmissions, as disclosed by Lindoff in order to efficiently use resources in the system and properly and correctly configure the receiver which is optimized and tailored for a particular training sequence.

Regarding claim 35, 51, the combination of Lindoff and Haartsen, more specifically Haartsen discloses wherein:

the first data packet further comprises a training preamble;

the first auxiliary coding is inserted within the training preamble of the first data packet (page 4 [0043] and page 1 [0012]-[0013]).

Art Unit: 2416

Regarding claim 36, 52, the combination of Lindoff and Haartsen, more specifically Haartsen discloses wherein:

the first data packet further comprises a training preamble (page 1 [0012]);

the first auxiliary coding is encoded at a frequency different from a frequency for the first data packet (the header is modulated using a robust modulation scheme that is different from the modulation scheme of the payload, page 3 [0036]);

receipt of the first auxiliary coding overlaps in time with receipt of the training preamble of the first data packet (page 4 [0040]).

Haartsen however fails to specifically disclose the first auxiliary coding is encoded using frequency shift keying (FSK) modulation by frequency division. Haartsen however discloses of using QAM and BPSK (page 3 [0034]) as modulation schemes. It is well known in the art that FSK is another modulation scheme known in the art and thus it would have been obvious to use FSK instead of BPSK as disclosed by Haartsen in order to have a more robust system.

Regarding claim 37, 53, Haartsen discloses wherein the first auxiliary coding is received before the first data packet is received (preamble is transmitted before the payload).

Regarding claims 41, 42, 57, 58, the combination of Lindoff and Haartsen fails to specifically disclose wherein the first auxiliary coding comprises five or fewer symbols/

Art Unit: 2416

five or fewer bits. However it would have been obvious to use 5 or fewer symbols/bits to efficiently use bandwidth and resources of the channel and efficiently use the given bits of the header/preamble field. It should further be noted that this is simply a network parameter.

Regarding claim 45, 61, Lindoff discloses wherein the first set of one or more parameters comprises at least one of a receiving-equalizer start value, a timing-recovery start value, an automatic-gain-controller start value, and an echo-canceller start value (col5 lines 35-51).

Regarding claim 48, 64, Lindoff discloses wherein the database table is further adapted to store the first identifier corresponding to each set of one or more parameters (col5 lines 60-col6 line6).

7. Claims 38, 39, 40, 43, 44, 54, 55, 56, 59, 60, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US 6853681), in view of Haartsen (US 2002/0131486), in view of Partyka (US 6925105), hereinafter referred to as Lindoff, Haartsen, and Partyka.

Regarding claim 38, 43, 44, 54, 59, 60, the combination of Lindoff and Haartsen fails to specifically disclose the specific limitation of having the a second transmitter which generate second auxiliary coding. Haartsen however discloses of a transmitter and a

Art Unit: 2416

receiver of a transmission system, and provides the motivation of training a radio receiver according to a training sequence dependent on a specified transmitter to produce successful communication between the transmitter and the receiver. Haartsen further discloses that the invention relates to radio communications for training an equalizer in a radio receiver (page 1 [0001]). It is well known in the art that radio communications not only incorporates a single transmitter and a single receiver, but also covers a plurality of transmitter and receivers. Haartsen's simply uses the concept of a single transmitter to receiver to illustrate the method of training a radio receiver in a simple and easy way. Haartsen further discloses that the invention may be used in any multi processor system (plurality of transmitters and receivers) and that the embodiments described should therefore be considered in all respects to **be illustrative and not restrictive** (page 4[0046]). Haartsen further discloses of the plural term of radio receivers (page 1 [0009]), thus providing the motivation to encompass a plurality of transmitters and receivers (a multi processor system). In a similar field of endeavor, Partyka discloses to a system in which a plurality of transmitters transmit data to one or more radio receivers (col1 lines 5-10) and the radio receiver acquires and continuously maintains synchronization (training) with each of a plurality of transmitter (col2 lines 30-35) and further discloses of "multipath fading" (col1 lines 55-60) as also disclosed by Haartsen (page 3 [0033]). Partyka further discloses that each transmitter has a transmitter identification number assigned to it that is included in each transmitted message in order to make it possible for the receiver to identify the source of each received message (col1 lines 28-35) and to differentiate one transmitter from another

Art Unit: 2416

(second transmitter, col8 lines 50-55) so that synchronization may be determined for each of the plurality of transmitters (generate a second auxiliary coding for transmittal with a second packet, wherein : the second coding identifies a second identifier; the second identifier identifies the second transmitter; and the second auxiliary coding is different from the second data packet (synchronization of the receiver to a plurality of transmitters, as seen from Haartsen, col2 lines 30-35). It would have thus been obvious to a person skilled in the art at the time the invention was made to incorporate the system of having a receiver communicate with a plurality of transmitters involving the use of transmission identification as disclosed by Partyka into the method of training a radio receiver as disclosed by Lindoff and Haartsen, in order to effectively train and synchronize a radio receiver to not just a single transmitter, but a plurality of transmitters. It would have been further obvious to a person skilled in the art to incorporate the concept of having an identifier (such as source address/local address) for the transmitter be included in packet for pre-training lookup of a reference training sequence (station ID parameter is used to perform a table look-up to determine training values) in order to correctly and successfully equalize a receiver to the correct transmitter, as well as having the first identifier being not the same as the source address, as this is simply a network parameter in how a system would want to identify parameters, either through the station identifier or through a identifier different from the source address.

Art Unit: 2416

Regarding claim 39, 40, 55, 56, the combination of Lindoff, Haartsen, and Partyka fails to disclose of transmitting the auxiliary coding with a same RF front end as said data packet or transmitting said auxiliary coding with a different RF front end as said data packet. Haartsen however discloses from figure 3 of a transmitter and a receiver system for transmission of data. It should thus be obvious to transmit the auxiliary coding with the same RF front end or a different RF front end from said data packet, as it is well known in the art that transmitters/receivers incorporate RF front ends for efficient data transmissions. It should be noted that transmitting of auxiliary coding through a specified RF front end is simply a systems parameter of the transmission system and its components.

8. Claims 46, 62, 65, 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindoff (US 6853681), in view of Haartsen (US 2002/0131486), in view of DeMartin et al. (US 6421527), hereinafter referred to as Lindoff, Haartsen, and DeMartin.

Regarding claims 46, 62, 65, 66, the combination of Lindoff, and Haartsen fails to specifically disclose the first set of one or more parameters is based on moving averages, from past data packets received from the first transmitter. Haartsen however discloses a system for training an equalizer in a radio receiver (page 1 [0001]) and that interference can be mitigated by using an equalizer (page 1 [0007]) and that radio receivers may use training sequences to adjust equalizer coefficients to compensate for fading (page 1[0009]). DeMartin further discloses of a system for dynamic adaptation of wireless communication between a mobile station and a base station (abstract) and

Art Unit: 2416

further discloses that the receiver recognizes the header code and knows the codec mode to use for the frame and that the equalizer makes a decision as to whether a logic 1 or zero and passes the result to the channel decoder (col4 lines 30-41). DeMartin further discloses that a suitable moving average of the soft-values is a good estimator of the C/I ratio of the channel and that the absolute values of the soft bits for the current frame are averaged together and the resulting value is then fed to a moving average filter and that the filter averages over 40 frames. The output of the filter, called average value, is then used to estimate the current C/I value and consequently the most suitable mode to be used (concept of having values (values to determine suitable mode) based on a moving average (average value) of past frames received from said transmitting device, col4 lines 49-col5 lines 11). It would have thus been obvious to a person skilled in the art to incorporate the concept of having values be based on a moving average of past frames received from said transmitting device as disclosed by DeMartin into the method of training a radio receiver as disclosed by Lindoff, and Haartsen, in order to efficiently determine how to train a radio receiver.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGUYEN NGO whose telephone number is (571)272-8398. The examiner can normally be reached on Monday-Friday 7am - 3:30 pm.

Art Unit: 2416

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571)272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KWANG B. YAO/

Supervisory Patent Examiner, Art Unit 2416

Nguyen Ngo

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Examiner, Art Unit 2416